

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A method for transmitting a downlink signal in a substantially non directional manner from a communication station to a first remote communication device on a downlink channel, the communication station including a smart antenna system having an array of antenna elements, the method comprising:

determining a first downlink smart antenna processing strategy for transmitting in a first non-directional manner;

transmitting a first downlink message from the communication station in the first non-directional manner using the first downlink smart antenna processing strategy; and

repeating transmitting the first downlink message from the communication station in a second non-directional manner,

wherein the repeated transmitting is non-identical repetition to facilitate the interference environment being different in the repetition.

2. (original) A method as describe in claim 1, wherein the first substantially non-directional manner differs from the second substantially non-directional manner.

3. (original) A method as describe in claim 1, further comprising:

determining at the communication station whether or not the first remote communication device successfully received the first transmitted first downlink message,



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wherein the repeated transmitting is if the first remote communication device did not successfully receive the first transmitted first downlink message.

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4. (original) A method as describe in claim 1, further comprising:
receiving one or more signals at the communication station from one or more other remote communication devices known to the communication station to be undesired in that any other remote communication device might receive one or more signals during, and on the same downlink channel as, the transmitting of the first downlink message and the repeated transmitting of the first downlink message,

wherein the determining of the first and second downlink processing strategies use the signals received from the other remote communication device.

5. (original) A method as described in claim 4,
wherein the communication station is a first base station of a communication system and the first remote communication device is a remote user terminal associated with the first base station, and

wherein each other remote communication device is a remote user terminal associated with one or more other base stations distinct from the first base station.

6. (original) A method as described in claim 1, wherein the first communication station is able to communicate with the first remote communication device on a conventional TDMA channel.

7. (original) A method as described in claim 1, wherein the first communication station is able to communicate with the first remote communication device on a conventional CDMA channel.

8. (original) A method as described in claim 1, wherein the first communication station is able to communicate with the first remote communication device on a conventional FDMA channel.

9. (original) A method as described in claim 1, wherein the first communication station comprises a cellular base station.

10. (original) A method as described in claim 1, wherein the first remote communication device includes a second plurality of antenna elements.

11. (original) A method as described in claim 10, wherein the first remote communication device includes a second smart antenna system that includes the second plurality of antenna elements.

12. (original) A method as described in claim 1, wherein the communication station is coupled to an external data and/or voice network.

13. (original) A method as described in claim 12, wherein the external network includes the Internet.

14. (original) A method as described in claim 1, wherein the first remote communication device includes a first remote user terminal.

15. (original) A method as described in claim 14, wherein the first remote user terminal is mobile.

16. (original) A method as described in claim 4, wherein the steps of transmitting in the first and second non-directional manners include mitigating interference towards the undesired communication devices.

17. (original) A method as described in claim 4,
wherein the first smart antenna processing strategy is for transmission in a first direction wherefrom there were no substantial signals received at the communication station in the receiving step,
wherein the second smart antenna processing strategy is for transmission in a second direction wherefrom there were no substantial signals received at the communication station in the receiving step, and

wherein the first and the second directions differ.

18. (original) A method as described in claim 17, wherein the first and second smart antenna processing strategies are determined from the received signal covariance of the signals received at the communication station in the receiving step.
19. (original) A communication station comprising:
 - a smart antenna system to communicate with a first remote communication device according to a smart antenna processing strategy, the smart antenna system including a plurality of antenna elements;
 - a processor to determine a first downlink smart antenna processing strategy;
 - a downlink transmission unit, coupled to the antenna element plurality and to the processor, to transmit a first downlink message from the communication station in the first non-directional manner using the first downlink smart antenna processing strategy;
 - the downlink transmission unit further to repeatedly transmit the first downlink message from the communication station in a second non-directional manner, the repeated transmitting being non-identical repetition to facilitate the interference environment being different in the repetition.
20. (original) A communication station as describe in claim 19, wherein the first substantially non-directional manner differs from the second substantially non-directional manner.
21. (original) A communication station as describe in claim 19, further comprising:
 - an uplink reception unit, coupled to the antenna element plurality, to receive an uplink response signal from the first remote communication device in response to the first downlink message, and

wherein the downlink transmission unit repeats transmitting the first downlink message if the first remote communication device did not successfully receive the first transmitted first downlink message.

22. (original) A communication station as describe in claim 19, further comprising:

an uplink reception unit, coupled to the antenna element plurality and to the processor, to receive one or more signals from one or more other remote communication devices known to the communication station to be undesired in that any other remote communication device might receive one or more signals during, and on the same downlink channel as, the transmitting of the first downlink message and the repeated transmitting of the first downlink message,

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wherein the processor further is to determine a second downlink smart antenna processing strategy, and wherein the processor determines the first and second downlink strategies using the signals received from the other remote communication device.

23. (original) A communication station as described in claim 22, wherein the communication station is a first base station of a communication system and the first remote communication device is a remote user terminal associated with the first base station, and

wherein each other remote communication device is a remote user terminal associated with one or more other base stations distinct from the first base station.

24. (original) A communication station as described in claim 19, able to communicate with the first remote communication device on a conventional TDMA channel.

25. (original) A communication station as described in claim 19, able to communicate with the first remote communication device on a conventional CDMA channel.

26. (original) A communication station as described in claim 19, able to communicate with the first remote communication device on a conventional FDMA channel.

27. (original) A communication station as described in claim 19, comprising a cellular base station.

28. (original) A communication station as described in claim 19, wherein the first remote communication device includes a second plurality of antenna elements.

29. (original) A communication station as described in claim 28, wherein the first remote communication device includes a second smart antenna system that includes the second plurality of antenna elements.

30. (original) A communication station as described in claim 19, coupled to an external data and/or voice network.

31. (original) A communication station as described in claim 30, wherein the external network includes the Internet.

32. (original) A communication station as described in claim 19, wherein the first remote communication device includes a first remote user terminal.

33. (original) A communication station as described in claim 32, wherein the first remote user terminal is mobile.

34. (original) A communication station as described in claim 22, wherein first and second non-directional manners include mitigating interference towards the undesired communication devices.

35. (original) A communication station as described in claim 22,
wherein the first smart antenna processing strategy is for transmission in a first
direction wherefrom there were no substantial signals received at the communication
station in the receiving step,
wherein the second smart antenna processing strategy is for transmission in a second
direction wherefrom there were no substantial signals received at the communication
station in the receiving step, and
wherein the first and the second directions differ.

36. (original) A communication station as described in claim 35, wherein the
first and second smart antenna processing strategies are determined from the
received signal covariance of the signals received at the communication station in
the receiving step.

37. (original) A machine-readable medium having stored thereon information
representing a set of machine-executable instructions, that, when executed by a
machine, cause the machine to perform a method for transmitting a downlink signal
in a substantially non directional manner from a communication station to a first
remote communication device on a downlink channel, the communication station
including a smart antenna system having an array of antenna elements, the method
comprising:
determining a first downlink smart antenna processing strategy for
transmitting in a first non-directional manner;
transmitting a first downlink message from the communication station in
the first non-directional manner using the first downlink smart antenna
processing strategy; and
repeating transmitting the first downlink message from the communication
station in a second non-directional manner,

wherein the repeated transmitting is non-identical repetition to facilitate the
interference environment being different in the repetition.

38. (original) A machine-readable medium as described in claim 37, wherein the first substantially non-directional manner differs from the second substantially non-directional manner.

39. (original) A machine-readable medium as described in claim 37,
wherein the method further includes:

determining at the communication station whether or not the first remote communication device successfully received the first transmitted first downlink message, and

wherein the repeated transmitting is if the first remote communication device did not successfully receive the first transmitted first downlink message.

40. (original) A machine-readable medium as described in claim 37,
wherein the method further includes:

receiving one or more signals at the communication station from one or more other remote communication devices known to the communication station to be undesired in that any other remote communication device might receive one or more signals during, and on the same downlink channel as, the transmitting of the first downlink message and the repeated transmitting of the first downlink message, and

wherein the determining of the first and second downlink processing strategies use the signals received from the other remote communication device.

41. (original) A machine-readable medium as described in claim 40,
wherein the communication station is a first base station of a communication system
and the first remote communication device is a remote user terminal associated with
the first base station, and
wherein each other remote communication device is a remote user terminal
associated with one or more other base stations distinct from the first base station.

42. (original) A machine-readable medium as described in claim 37, wherein the
communication station is able to communicate with the first remote communication
device on a conventional TDMA channel.

43. (original) A machine-readable medium as described in claim 37, wherein the
communication station is able to communicate with the first remote communication
device on a conventional CDMA channel.

44. (original) A machine-readable medium as described in claim 37, wherein the
communication station is able to communicate with the first remote communication
device on a conventional FDMA channel.

45. (original) A machine-readable medium as described in claim 37, wherein the
communication station comprises a cellular base station.

46. (original) A machine-readable medium as described in claim 37, wherein the
first remote communication device includes a second plurality of antenna elements.

47. (original) A machine-readable medium as described in claim 46, wherein the
first remote communication device includes a second smart antenna system that
includes the second plurality of antenna elements.

48. (original) A machine-readable medium as described in claim 37, wherein the
communication station is coupled to an external data and/or voice network.

49. (original) A machine-readable medium as described in claim 48, wherein the
external network includes the Internet.

50. (original) A machine-readable medium as described in claim 37, wherein the first remote communication device includes a first remote user terminal.

51. (original) A machine-readable medium as described in claim 50, wherein the first remote user terminal is mobile.

52. (original) A machine-readable medium as described in claim 40, wherein the steps of transmitting in the first and second non-directional manners include mitigating interference towards the undesired communication devices.

53. (original) A machine-readable medium as described in claim 40,
wherein the first smart antenna processing strategy is for transmission in a first direction wherefrom there were no substantial signals received at the communication station in the receiving step,
wherein the second smart antenna processing strategy is for transmission in a second direction wherefrom there were no substantial signals received at the communication station in the receiving step, and
wherein the first and the second directions differ.

54. (original) A machine-readable medium as described in claim 53, wherein the first and second smart antenna processing strategies are determined from the received signal covariance of the signals received at the communication station in the receiving step.

55.-68. (canceled)